C A M B O D I A

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The need for multiple strategies to combat vitamin A deficiency among women in Cambodia

Results from the Cambodia National Micronutrient Survey reveal that night blindness is a major public health problem among pregnant and lactating women. Night blindness rates among lactating women were 1.0-6.8% and 2.5-8.4% of women reported suffering from night blindness during their most recent pregnancy. Given the increased risk of morbidity and mortality, this problem should receive high priority for program planning and resource allocation in Cambodia. The most effective way to improve vitamin A status among women is through a combination of approaches, including improving vitamin A intake, promoting vitamin A and multi-micronutrient supplementation during pregnancy and adolescence, and improving the coverage of postpartum vitamin A capsule (VAC) supplementation.

Vitamin A deficiency among women

Vitamin A deficiency (VAD) has been characterized mainly as a problem among preschool children because of the increased risk of mortality and its clinical manifestations of xerophthalmia and blindness. The role of vitamin A in child morbidity and mortality, although originally discovered in the early 1900s, has been 're-established' over the past 15 years and this has increased efforts to control VAD among children. It has only been in the past five years however that the extent of VAD and its link to increased morbidity and mortality among women has been recognized and this information is just now being brought to international and national attention (see sidebar, p3).

National or large-scale surveys of the magnitude of VAD among women, estimated by the prevalence of clinical or biochemical indicators (such as night blindness or low serum retinol concentration), are limited. With support from USAID and UNICEF, several surveys have been conducted recently in Asia, showing that the prevalence of VAD among women is very high in many countries.

The recent Cambodia National Micronutrient survey included functional and biochemical assessments of vitamin A status, as well as other indicators of nutritional status of women and children, and comprehensive information on dietary intake, morbidity and the coverage of nutrition and health programs. This bulletin provides information that can help to guide future policies and programs to improve vitamin A status of women in Cambodia. The data from this survey is also contributing to international discussions about the use of maternal night blindness as an indicator to monitor progress in controlling VAD.

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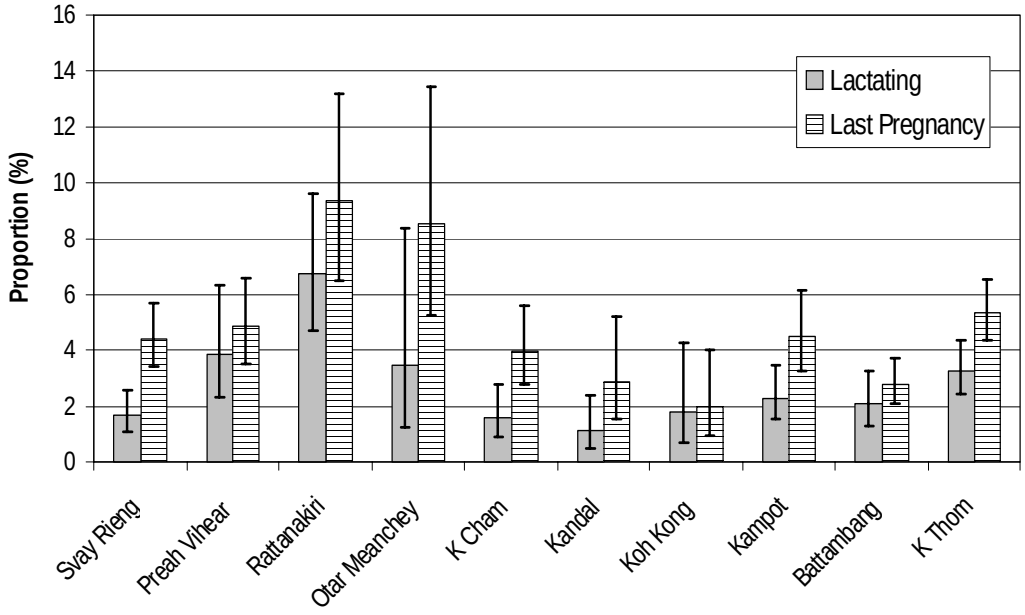
Figure 1. Prevalence of night blindness among lactating women (child < 24 mos; n=9,050) and during the mother's most recent pregnancy (< 3 yrs ago; n=14,933), by province. Bars indicate 95% CI (Confidence Interval) corrected for design effect.



Prevalence of night blindness

Results from the Cambodia survey show that VAD is a large problem among lactating mothers and during pregnancy. **Figure 1** shows the prevalence of night blindness, the first clinical sign of VAD, by province. Night blindness among lactating women ranged from 1.1-6.8% in the 10 provinces included in the national survey. The reported prevalence of night blindness during the last pregnancy in the previous 3 years ranged from 2.0-9.3%. Provinces with the highest prevalence rates include Rattanakiri, Otar Meanchey, Preah Vihear, Kampot, Svay Rieng and Kampong Thom. Night blindness is only the tip of the iceberg and a much larger proportion of women in Cambodia probably suffer from VAD and would benefit from an increased intake of vitamin†A.

Vitamin A programs for women

Programs to improve vitamin A status in a direct way are generally categorized into three approaches, supplementation, food fortification and diet diversification. These approaches were developed mainly to address VAD in children but with some modifications, can be applied to prevent and control VAD among women of reproductive age and other groups, such as adolescents and school-age children.

Daily low-dose supplements

Bi-annual high-dose VAC supplementation cannot be implemented for women of reproductive age because of the risk of teratogenic effects in the first trimester of pregnancy. However, a recent study in Nepal showed that weekly, low-dose supplementation with vitamin A can effectively reduce VAD and its consequences among women. Other studies are being carried out to confirm the efficacy of daily supplementation as well as to test the feasibility of implementing these programs for women during pregnancy. In the meantime, supplementation with multiple micronutrients for women during pregnancy, for adolescent girls, and for preschool children is becoming accepted internationally as an important strategy to improve nutrition and is increasingly being discussed as a future program in many countries.

Postpartum high-dose VAC

Postpartum VAC supplementation is promoted to boost the vitamin A stores of women after pregnancy and to increase vitamin A content of breastmilk. Since 1994 the Royal Government of Cambodia has included postpartum women as one of the target groups for receiving a high-dose vitamin A capsule.[1] The survey data show that postpartum VAC coverage is still very low in all provinces, ranging from 1-10%. However, in Kandal, coverage increased from 8.7% by mid-1999 to 12.5% by mid-2000, suggesting that coverage can be increased if women have more contact with health centers or outreach activities. The post partum VAC program is important, but should not be the sole strategy to improve vitamin A status among women because it is difficult to reach women when births are not regularly attended by trained health staff and because the protection of

[1] WHO/IVACG recommend that high-dose vitamin A capsules can be provided without risk up to eight weeks postpartum

the VAC does not extend beyond several months after delivery.

Dietary vitamin A intake
Increasing vitamin A intake from natural sources can also be part of a strategy to improve vitamin A status. The survey showed that the majority of women in Cambodia consumed much less than the recommended daily allowance (RDA) of vitamin A. Less than 6% of lactating women consumed the RDA of 1200 retinol equivalents (RE) and less than 11% of pregnant women consumed the RDA of 1000 RE. Median vitamin A intake was 181 RE/day among pregnant women and 201 RE/day among lactating mothers.

Social marketing
In areas where there is adequate availability of vitamin A rich foods and these foods are within the economic reach of households, social marketing has been shown to be an effective way to improve vitamin A intake of women.[2] Similar activities may also be feasible and effective in specific provinces or among particular risk groups in Cambodia.

Home gardening
In areas where availability and access to vitamin A-rich foods are limited, homestead gardening, fisheries and small animal husbandry can increase their availability and consumption. An assessment of home gardening in Bangladesh using the data from the HKI/GOB national vitamin A survey showed that the risk of night blindness among women and children was lower in households with home gardens compared to those living in households without home gardens. Based on HKI's experience in Bangladesh, a home gardening program was recently initiated in several provinces in Cambodia. An assessment of this pilot program suggests that it can be further expanded. In addition to protecting against night blindness, these programs provide a way to reach women with other services and information, such as micro-enterprise opportunities, literacy programs, health education for HIV/AIDs, micronutrient supplementation, and child health programs.

Food fortification
Fortifying foods with vitamin A and other micronutrients has also been shown to be an effective and sustainable way to increase the intake of essential vitamins and minerals for special sub-groups of the population, such as infant foods, as well as for all household members, such as iodization of salt. The first step is to identify potential foods that can be fortified and a viable food industry. Because Cambodia relies heavily on neighboring countries for processed foods, regional initiatives will be required.

As found in other countries, VAD co-exists with other micronutrient deficiencies in Cambodia. Among pregnant women, 68% were anemic and more than 50% of non pregnant women were anemic. Similarly, children of mothers who were night blind were eight times more likely to be night blind than were children of mothers who were not night blind. This suggests that programs reaching multiple household members, such as food fortification and food-based approaches, and those that provide multiple nutrients simultaneously may be the most effective over the long-term.

Recent evidence from Asia about health consequences of vitamin A deficiency in women

1994: Risk of diarrhea was higher among night blind women. (Bloem et al. Vitamin A deficiency among women in the reproductive years: an ignored problem. IVACG Abstract)

1995: A large proportion of women in Nepal and Laos experienced night blindness during pregnancy and lactation. (Katz etal. Night blindness is prevalent during pregnancy and lactation in rural Nepal. J. Nutr 125:2122-7; Malyavin et al. National vitamin A survey of Laos)

1998: Morbidity was higher among night blind women during pregnancy. (Christian et al. Night blindness of pregnancy in rural Nepal – nutritional and health risks. Int J Epidemiol 1998;27:231-37)

1999: Maternal mortality was reduced by 42% when women of reproductive age received a weekly low-dose of vitamin A. (West et al. Double-blind, cluster-randomized trial of low dose supplementation with vitamin A or beta-carotene on mortality related to pregnancy in Nepal. Br Med J;318: 570-5)

2000: Night blind women were more likely to die from infections. (Christian et al. Night blindness during pregnancy and subsequent mortality among women in Nepal: effects of vitamin A and beta-carotene supplementation. Am J Epidemiol 2000;152[6]:542-7)

[2] de Pee S, Bloem MW, Satoto, Yip R, Sukaton A, Tjiong R, Shrimpton R, Muhilal, Kodyat B. Impact of a Social Marketing Campaign in Promoting Dark-green Leafy Vegetables and Eggs in Central Java, Indonesia, Int J Vit Nutr Res 1998;68:389-98.

Conclusions

- Night blindness is a significant health problem among pregnant and lactating women.
- A large proportion of Cambodian women do not consume adequate vitamin A from their diet.
- Coverage of the VAC distribution among postpartum women is very low.
- Anemia, wasting and other nutrition problems are also highly prevalent among women in Cambodia and these nutrient deficiencies co-exist.

Recommendations

- Expand programs to increase the intake of vitamin A rich foods through social marketing, home gardening, poultry and small animal husbandry.
- Explore the feasibility of fortifying foods with vitamin A or preferably, with multiple micronutrients.
- Improve coverage of postpartum VAC distribution program.
- Explore the feasibility of providing multi-micronutrients during pregnancy and adolescence.
- Continue monitoring and surveillance of VAD among women and the effectiveness of programs.

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For information and correspondence, contact:

Helen Keller International, Cambodia
P.O. Box 168, Phnom Penh
Kingdom of Cambodia
Telephone: 855-23-210851
Fax: 855-23-210852

Ms. Dora Panagides, Country Director
E-mail: hki@bigpond.com.kh

Ms. La-Ong Tokmoh, Program Manager
E-mail: ong@bigpond.com.kh

Helen Keller International, Regional Office
P.O. Box 4338, Jakarta Pusat
Indonesia
Telephone: 62-21-7198147/7199163
Fax: 62-21-7198148

Dr. Martin W. Bloem, Regional Director
E-mail: mwbloem@compuserve.com

Dr. Regina Moench Pfanner, Regional Coordinator
E-mail: remoench@cbn.net.id

Dr. Saskia de Pee, Regional Nutrition Research Advisor
E-mail: sdepee@compuserve.com

Ms. Lynnda Kiess, Regional Advisor
E-mail: lkiess@bdonline.com

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